

continuous with a streak on the side of the breast. Elytra tapering from base to apex, each elytron ending in a straight point, the sutural edge being also nearly straight; surface shining brown-black, punctured (except towards the apex), and marked on each with two tawny vittæ, the inner one of which is severed after the middle, the severed ends oblique and running parallel for a short distance; suture towards the base and disk marked with faint silky grey lines. Body beneath shining black, clothed with fine silky greyish pile; abdomen with three tawny stripes. Legs black, clothed with silky tawny pile.

Common on dead branches of trees at Ega.

[To be continued.]

IV.—On the Terrestrial and Fluvial Mollusca of Trinidad.

By R. J. LECHMERE GUPPY, Civil Service, Trinidad.

THE most complete list of the terrestrial Mollusca of Trinidad which I have seen is that contained in a paper by Mr. Bland, "On the Geographical Distribution of the West-India Land-Shells"*. In this list are given thirteen land-shells; and mention is made, in the same paper, of two freshwater Mollusca. Of the thirteen land-shells enumerated by Mr. Bland I have only found eleven; but, besides these, I have found thirteen other terrestrial Gasteropoda; and in addition to the two freshwater Mollusca, I have found five fluvial Gasteropoda and one Conchifer, making a total number of thirty-two species of terrestrial and fluvial Mollusca.

In the 'Annals and Magazine of Natural History' for October 1864† I described some species of operculate Mollusca of the land and fresh waters of Trinidad. I now propose to complete and correct the list of the Operculata, and to give some account of the Inoperculata, so as to bring under view in one memoir the whole of the terrestrial and fluvial molluscan fauna of the island.

With regard to classification, I have done the best I could under the circumstances. There is so much confusion respecting some of the genera (e. g. *Orthalicus*, *Subulina*, *Opeas*, and others made from the old genus *Bulimus*), that I see no way of escaping the difficulties attendant on assigning the proper place to the species of those groups; and until the classification of the Helicidæ shall be remodelled by competent authority, generic names must in some cases go for very little. I have therefore in this paper included one or two species in the genus *Bulimus*

* Ann. Lyceum Nat. Hist. New York, vol. vii.

† Ser. 3. vol. xiv. p. 243.

which, I am of opinion, ought to be separated therefrom. I think that the peculiar animal of *B. oblongus* may entitle it to generic distinction, though it remains to be seen if any of the most nearly allied forms have similar animals. Then *Bulimus octonoides* and *B. caracasensis* seem also to deserve separate places. Pfeiffer, Beck, Albers, Chenu, and many others have adopted and devised genera for the reception of similar forms; but, as each author appears to have his own peculiar views as to what species shall be included in each particular genus, and as in the majority of cases I feel myself unable to subscribe to those views, it seems to me that the only course left open is the one I have adopted.

NERITINA, Lamarck.

Neritina microstoma, D'Orb.

The Trinidad examples agree with specimens from Cuba, and also with D'Orbigny's description and figures in the 'Moll. de Cuba;' but they do not accord so well with the examples in the British Museum. Some of the specimens of *N. virginea* strongly resemble the Trinidad shell.

PALUDESTRINA, D'Orbigny.

Paludestrina spiralis, Guppy.

Bithinia spiralis, Guppy, Ann. & Mag. Nat. Hist. ser. 3. vol. xiv. p. 244.

Further observation has enabled me to refer this mollusk to D'Orbigny's genus, and to add the following remarks:—

The operculum is thin and paucispiral, its nucleus subcentral. The eyes are on bosses on the outer and hinder sides of the tentacles. The animal strongly resembles that of *Skenea*. It is viviparous, and about November it contains eggs and young in every stage of development. The young shell is depressed and umbilicate, and resembles *Skenea planorbis*. Before birth the young mollusk is already furnished with an operculum.

Lingual teeth 3.1.3: central with a triangular, reflexed, serrate edge; first lateral small, serrate; second transverse, serrate on the reflexed edge; third slender, claw-shaped, serrate. This dentition, though not altogether unlike that of some of the Melaniadæ, presents considerable resemblance to that of certain of the Calyptræadæ.

AMPULLARIA, Lamarck.

Ampullaria urceus, Müller. (*A. rugosa*, Lam.)

The animal is black, and the left siphon, when fully protruded, is longer than the shell. The right siphon is short. The head is produced into two lobes, which are extended into acute tentacular processes. The eyes are well developed, and hard, like

those of a fish; they are placed on stout pedicels joined to the outer and hinder side of the tentacles, which are acutely pointed and of moderate length. The jaws are large, smooth, and almost shelly. The lingual teeth are 3.1.3: central broad, subquadrate, with a strong apical point, on each side of which are two smaller dentations; first lateral broad, obtusely pointed, with a dentation on the inner edge; two outer laterals similar, simply claw-shaped. The dental membrane is supported on two large triangular cartilages, to which are attached strong muscles.

This species inhabits the larger rivers and swamps, burying itself in the mud during the dry season.

Var. *purpurascens* (*A. purpurascens*, Guppy, Ann. & Mag. Nat. Hist. ser. 3. vol. xiv. p. 243). I described this form as a distinct species, but I have since seen reason to believe it only a variety of *A. urceus*.

Ampullaria effusa, Chemn. (*A. glauca*, Linn.)

This shell is rather variable, both as to colour and shape. I have described a variety, for which I propose the name *conica*, in the 'Annals' (*loc. cit.*), and I have also there described the eggs and young shell of *A. effusa*. Another variety of *A. effusa* I propose to distinguish by the name *tristis*. In this variety the spire is rather more elevated than in the type, the peristome more prominent, and the colour-bands are either altogether absent or externally indistinct, the shell being of a dark horn-colour. These varieties would probably be regarded as distinct species by many naturalists; but my acquaintance with the habits of the species enables me to affirm that the differences are not specific.

This species, like *A. urceus*, buries itself during the continuance of drought. It can exist for months in a torpid state. The typical form is found in rapid streams, while the varieties *conica* and *tristis* occur in slow-running water and in ponds.

I think it probable that *A. crocostoma*, Phil., a Venezuelan shell, is only another variety of this species; and there may be other forms which ought in strictness to come under the same specific appellation.

MARISA, Gray.

Marisa cornu-arietis, Linn., sp.

M. Knorrii, Phil.; *Ceratodes fasciatus*, Guilding.

The *animal* is grey, mottled and streaked with brown and black. The muzzle is produced into two acute tentaculiform lobes. The left siphon, as well as the right one, is rudimentary

and scarcely closed, and consists merely of an extended fold of the neck-lappet.

A smaller variety occurs in some places. While in the type the spire is depressed below the level of the last whorl, in the variety the apex is slightly above that level. I propose to call this variety *Swifti*, after Mr. Swift, of St. Thomas, who, amongst many other valuable hints, pointed out to me the differences in these shells.

Marisa cornu-arietis prefers ponds and the more quiet streams, as might be inferred from the shape of its shell, which does not enable the animal to resist a strong current so well as the globular shells of the *Ampullaria*. It is therefore less common in mountain-streams. Its capability of resisting drought is also very much less than that of *A. urceus* and *A. effusa*.

The lingual dentition is 3.1.3, as in *Ampullaria*. The central tooth has three dentations on each side of the strong, acute apical point. The mandibles are similar to those of *Ampullaria effusa*, but thinner and weaker. The eggs are deposited in jelly-like masses on twigs, &c., in the water. The young mollusks, when hatched, are imperforate and subglobose, very similar to the young of *A. effusa*.

ADAMSIELLA, Pfeiffer.

Adamsiella aripensis, Guppy.

(Ann. & Mag. Nat. Hist. ser. 3. vol. xiv. p. 246.)

This mollusk lives principally among the dead leaves on the ground in the forests. It frequently suspends itself by two or three glutinous threads from branches on the under surface of leaves at a height of one or two feet from the earth.

CYCLOTUS, Guilding.

In my former account* of the two species of this genus inhabiting Trinidad I did not give a full description of the animal, because I was under the impression that naturalists were sufficiently acquainted with the general characters of the genus. But I find that Mr. W. T. Blanford†, observing that certain Indian species have a divided foot like *Cyclostoma*, has proposed for them the generic name of *Cyclotopsis*. He is also of opinion that the American species should be classed with *Cyclostoma*.

The animal of *Cyclotus translucidus*, Sow., is of a pinkish colour, light about the body and foot, but deep on the tentacles; the foot is broad, undivided, and obtusely pointed behind; the tentacles subulate; the eyes small, black, and sessile at the bases

* Ann. & Mag. Nat. Hist. ser. 3. vol. xiv. p. 245.

† *Ibid.* vol. xiii. p. 446.

of the tentacles; the head is prolonged into an obtuse undivided muzzle, which scarcely extends forward beyond the foot; the ♂ organ is large and subulate, situate medially on the back of the neck. The animal resembles generally *Cyclophorus*, and not *Cyclostoma**

The animal of *C. rugatus* does not differ remarkably from the preceding; and I feel confident that the animals of the allied West-Indian and American forms will be found on examination to be similar also. The lingual dentition fully bears out these remarks. The teeth of the *Cyclophoridae* are 3.1.3, while those of the *Cyclostomidae* are 2.1.2 or 00.2.1.2.00. The Trinidad *Cycloti* have the former dentition.

From these considerations I do not think it probable that, in the present state of our knowledge, a new genus need be constituted for the American (including the West-Indian) species.

Cyclotus translucidus, Sow., sp.

C. trinitensis, Guppy, Ann. & Mag. Nat. Hist. ser. 3. vol. xiv. p. 245.

Though I was at first led to consider the Trinidad shell to be distinct, I am now of opinion that it cannot be separated from the Venezuelan species.

This and the following species are found among dead leaves in forests, on calcareous soils.

Cyclotus rugatus, Guppy.

(Ann. & Mag. Nat. Hist. ser. 3. vol. xiv. p. 246.)

This shell is closely allied to *C. stramineus*, Reeve, from which it is readily to be distinguished by the fine fold-like striæ being oblique and rising diagonally forward in *C. stramineus*. These striæ are also continued to the aperture in that species; but in *C. rugatus* the striæ run in zigzags, and coincide in general direction with the lines of growth, resembling in this respect the Jamaica species *C. corrugatus* and *C. jamaicensis*. *C. rugatus* is distinguished from these latter forms by its general shape and by the absence of any ridge round the umbilicus. In *C. rugatus* the angularly wrinkled striæ become nearly obsolete at the aperture. *C. stramineus* has a spire of half a whorl more than *C. rugatus*. Again, specimens of the latter shell are generally easily distinguished by their dark reddish-brown colour.

HELICINA, Lamarck.

Helicina nemoralis, Guppy.

Helicina zonata, Guppy, Ann. & Mag. Nat. Hist. ser. 3. vol. xiv. p. 247.

This shell is very like *H. jamaicensis*, from which it may most

* D'Orbigny has given figures of the animal of *C. inca* (Voy. Amér. Mérid. Mollusques, pl. 46. figs. 21-23). The figure given by Chenu (Man. de Conch. vol. i. p. 2. f. 11) is probably copied from D'Orbigny, and also that in Mrs. Gray's 'Figures of Mollusca.'

readily be distinguished by the coloration and by the band of chestnut above the suture in the present species. There are some minor differences.

As the specific name *zonata* had been previously applied by Lesson to a *Helicina*, I am under the necessity of giving a new name to this species. I therefore propose to call it *H. nemoralis*. It is found on the leaves of trees in the forests.

Helicina barbata, Guppy.

(Ann. & Mag. Nat. Hist. ser. 3. vol. xiv. p. 247.)

This shell is so nearly allied to *H. Dysoni*, Pf., of Honduras (and perhaps also to *H. foveata*, Pf., of the Antilles) that it is possible they are no more than varieties of one species.

PHYSA, Draparnaud.

Physa rivalis, Maton & Rackett.

The mantle is ornamented with stripes and undulating bands, which, during the life of the animal, seem to be on the shell.

The dental band is broad, and covered with numerous minute teeth, which are simple, slender, and slightly curved. They are arranged in fifty or sixty divergent curved rows of about 250 or 300 each.

The Trinidad shell does not attain so large a size as that of Cuba (*P. Sowerbiana*, D'Orb.) and the Antilles; but, owing to the close resemblance in all other respects, I feel unable to separate it as a species.

PLANORBIS, Guettard.

Planorbis terversanus, D'Orbigny.

The greatest breadth of the Trinidad examples is about 0.4 inch.

The lingual teeth are numerous, tricuspid, with a broad base. The central tooth has two strong, prominent, acute cusps, with a small intermediate point. The laterals are somewhat triangular, the outer cusp being strongly developed, the two inner ones merely small points. Outside of the fifth row of laterals the teeth become much smaller.

VAGINULUS, Férussac.

Vaginulus Sloanei, Fér.

The dental band is broad, the teeth numerous, simple, similar; the median row small. In its dentition this species resembles the Helicidæ more than *Testacellus*.

The eggs are oval-oblong, transparent, gelatinous, about $\frac{1}{4}$ inch long, and united in chains of ten or twelve.

SUCCINEA, Draparnaud.

Succinea approximans, Shuttleworth.

This shell resembles *S. propinqua*, Drouet, which may possibly prove to be a variety.

The *animal* is speckled and streaked with black. The lower pair of tentacles are small. It is found in moist places, but never in water. The lingual teeth are numerous, in straight rows, on subquadrate bases, edges reflexed; central with one strong rounded point, and a smaller one on each side; laterals bidentate, inner cusp largest, with an obsolete toothlet on its inner edge.

BULIMUS, Scopoli.

Bulimus oblongus, Müller, sp.

The peculiar conformation of the head of this mollusk was noticed by D'Orbigny, and figured by him*. On each side of the head is a flattened appendage, which is divided into eight short, obtuse tentacular processes, each about $\frac{1}{10}$ th of an inch in length. These probably aid in enabling the animal to burrow in the soil, and perhaps even in discriminating food.

The sexes are separate; the genital orifice is large and situate beneath the upper tentacle on the right side, near the junction of the above-described appendages with the body. The ♂ organ is about 2 inches long, club-shaped, furnished internally with a long stout cartilage. The lingual band is broad, and covered with numerous similar teeth in straight rows; the cusps simple, rather obtuse. The dental membrane is folded over a strong cartilage. There are two mandibles, somewhat as in the Cephalopods, the upper one rather horseshoe-shaped, the lower one tongue-like and triangular, occupying the cavity of the throat.

Bulimus zebra, Müller.

D'Orbigny, in the 'Moll. de Cuba,' makes *B. undatus* a synonym of *B. zebra*, and gives the preference to the latter name on account of priority. I have followed him, though I am aware that many naturalists consider these to be distinct species. Beck (Index) makes the West-Indian shell *Orthalicus undatus*, and the South-American one *O. zebra*; but having compared all the specimens and figures within my reach, I am unable to perceive any constant differences. These shells, as well as *B. phlogerus*, D'Orb., seem to me to belong to one species; and *B. regina*, Fér., may possibly be a reversed variety of the same.

The lingual band is very large, covered with numerous similar subquadrate teeth, in somewhat divergent rows.

* Voy. Amér. Mérid. p. 297, pl. 37. f. 1, 2. There is a figure also in Mrs. Gray's 'Figures of Mollusca.'

Bulimus multifasciatus, Lam.

The body of the animal is brown. The five bands of chestnut on the shell, which are also represented on the mantle, are occasionally so much interrupted as to form rows of rather distant square spots. The shell is somewhat variable as to size.

Lingual teeth numerous, similar; median with an apical toothlet, and a smaller point on each side of it; laterals in diverging rows, each with an oblique, broadly reflexed cutting-edge. Mandible semicircular, corrugate.

I propose to describe, as a variety of this species, a form found in the southern parts of the island:—

Var. *imperfectus*. Shell subperforate, oblong-conic, thin, fragile, subpellucid, shining, striated by fine longitudinal lines of growth, and zoned with five chestnut bands, of which the fourth is the broadest, and the second the smallest; whorls 5-6, scarcely convex; peristome simple, acute. Height 0·6 inch, breadth 0·3 inch; height of aperture 0·25 inch.

This variety is much like the young of the typical form. Its peristome is more complete than in the young shell of the type, but never expanded as in the adults. In the southern parts of the island, where this variety occurs, I have never met with a single example of the type form. The *B. rufolineatus* of Drouet, probably a variety of the *B. pæcilus* of D'Orbigny, somewhat resembles this variety; but that species seems to have only 3-4 bands of colour, while its whorls are a little more convex and its aperture larger.

Bulimus immaculatus, C. B. Adams.

B. flavidus, Menke; *B. stramineus*, Guilding, part.

This shell is not to be confounded with the true *B. stramineus*. *B. immaculatus* is similar in shape and size to *B. multifasciatus*. It wants the bands of colour which adorn the latter, and it is usually of a white colour, tinged more or less with yellow, especially near the aperture. The animal is whitish, more or less deeply tinged with yellow. Lingual dentition as in *B. multifasciatus*.

This and the two foregoing and the following species are entirely arboreal in their habits.

Bulimus aureolus, n. sp.

Shell subperforate, ovate-conic, rather acuminate, thin, yellow, shining, translucent, finely striated by minute and close longitudinal lines of growth, crossed by finer decussating striae; whorls 5, scarcely convex, except the last, which is somewhat carinate; aperture ovate; peristome simple, acute. Height 0·6 inch, breadth 0·3 inch; height of aperture 0·32 inch.

The *animal* has a bright yellow mantle, the vascular system of which is beautifully displayed through the transparent yellow shell. Along the middle of the last whorl runs a vessel, from which branches are given off to each side. The pulsation of the heart can be very distinctly seen in this species.

The lingual teeth are numerous; medians tricuspid; laterals with an oblique, reflexed cutting-edge, and with two short, rounded toothlets. Mandible semicircular, corrugate.

Bulimus fraterculus, Fér.

The Trinidad examples of this species are smaller than those of the Antilles, and seem to me to resemble somewhat *B. orthodoxus*, Drouet, a Guiana species. The dimensions of the largest example I have found are as follows:—height 0·7 inch, greatest breadth 0·3 inch.

Bulimus octonoides, Adams.

A shell somewhat like *Stenogyra octona* at first sight, but distinguished by the form of the whorls and of the aperture, and by the columella not being truncate. Perhaps *B. subula*, Pf., belongs to this species.

Bulimus caracasensis, Reeve.

B. micra, D'Orb.*, and *B. oryza*, Brug., seem to belong to this species. If this should prove to be the case, the latter name would be preferable.

Lingual teeth numerous, on a very small dental band; medians minute, simple, acute; laterals symmetrical, with three rounded cusps, of which the middle one is the most prominent.

This and the preceding are terrestrial in their habits.

STENOGYRA, Shuttleworth.

Shell subulate, whorls numerous, columella truncate.

Stenogyra octona, Linn., sp.

This species is very common in gardens and cultivations, where it lives on the ground, generally preferring to pass the day under leaves, pieces of wood, flower-pots, &c. At night, in damp weather, it creeps out to attack the shoots and the bases of the stems of young and tender plants, doing thereby much mischief. The eggs, which are subspherical, and have a white testaceous envelope, often remain in the shell, whose aperture they nearly fill, and hatch after the death of the parent.

* The examples of this species in D'Orbigny's collection in the British Museum are labelled "*B. camba*." It may be difficult to ascertain what the latter species really is, as D'Orbigny, in his plates in the 'Voyage,' gives the name to two different species; and in the index he refers to a third plate, on which that name does not appear.

Lingual teeth numerous; medians minute, simple; laterals symmetrical, tricuspid, central cusp much the largest.

I cannot separate this species from *S. terebraster*, Lam.

TORNATELLINA, Shuttleworth.

Tornatellina lamellata, Pot. & Mich.

Leptinaria antillarum, Shuttleworth.

This species is viviparous. In July and August it is found full of young shells. It is terrestrial, being found chiefly among decaying wood and vegetable matter.

Lingual teeth numerous; medians small, simple; laterals with a single, long, acute, pellucid cusp, and two obsolete dentations on the outer side. The mandible is somewhat horseshoe-shaped, apparently composed of a number of pentagonal prisms laid obliquely, resembling the shell-structure of Brachiopoda.

PLEKOCEILUS, Guilding.

Plekocheilus auris-sciuri, n. sp.

Shell rimate, oblong-conic, solid, silky-shining, with longitudinal lines of growth which become somewhat smoothly squamose on the last whorl; wholly white, or more often marbled, spotted, or striped longitudinally with fuscous or chestnut on a whitish, yellowish, or pinkish ground; whorls 6, rather convex, the last one compressed near the aperture; suture followed by an impressed line, which is more distinct on the last whorl; aperture constricted, angularly suboval; peristome white, expanded and reflected, much thickened, especially in the middle of the outer margin; inner margin sinuate, thickened and reflected over the umbilical fissure, bearing an obsolete tooth at its termination on the penultimate whorl; margins joined by a thin callus extending into the interior, under which is usually a stripe of chestnut-colour; columella with a strong fold. Height 1.65 inch, greatest breadth 0.7 inch; height of aperture 0.65 inch.

This very peculiar type of shell is represented in St. Vincent by *P. undulatus*, a species allied to the present, from which it may be distinguished by *P. auris-sciuri* being generally smaller and very considerably narrower in proportion to its height. The aperture is more angular and more produced anteriorly. *P. auris-sciuri* is therefore of the two the form that shows the greatest divergence from *Bulimus*. *P. distortus*, Brug., a Venezuelan shell, shows a still greater divergence from the type-forms of *Bulimus*. *P. distortus* is a longer and larger shell than the Trinidad species, and it is much narrower in proportion to its length. *P. auris-sciuri* has its whorls more convex, and the

columnellar tooth is considerably less developed than in *P. distortus*. *P. auris-sciuri* is thus intermediate between the Venezuelan species and that of St. Vincent.

The young shell is thin, and resembles a *Succinea*-shaped *Bulimus*. The animal has plain head-lobes. Lingual teeth—central with a single long acute cusp, base produced on both sides; laterals with a rather square point, on each side of which is an obsolete toothlet, base produced outwardly. Mandible semicircular, with distant coarse striæ.

This species is arboreal. In Bland's list it is given as *P. glaber*, from which it is evidently distinct.

ENNEA, H. & A. Adams.

Ennea bicolor, Hutton.

This species reminds one somewhat of shells of the genus *Carychiium*. It seems to be very rare in Trinidad; for I have only seen four examples, of which only two were alive. It inhabits the crevices of rocks in damp places near streams.

The tentacles (four) of *Ennea bicolor* are bright pink, the foot pale yellow. The lingual membrane is long and narrow; teeth slender, somewhat hooked. The dentition does not resemble that of the typical *Pupæ* (e. g. *P. chrysalis*, *P. striatella*, &c.). *Pupa striatella* has teeth resembling those of some of the *Bulimi*.

VERTIGO, Müller.

Vertigo Eyriesi, Drouet.

Pupa Eyriesii, Drouet, Moll. Guy. Franç. p. 71, pl. 2. f. 16, 17.

The two examples which have occurred to me in Trinidad are somewhat larger than the dimensions given by Drouet. They are 0.07 inch high, and 0.035 inch in extreme width. They were found on ferns.

CYLINDRELLA, Pfeiffer.

Cylindrella trinitaria, Pfeiffer.

The animal is ashy-grey, becoming nearly black about the head and tentacles. Foot elongate, narrow; tentacles (4) slender. Lingual ribbon very long and narrow; teeth 3.1.3; medians narrow, bicuspid, with two tubercles on the base; first and second laterals with simple round cusps; outer lateral inconspicuous, rather claw-shaped.

The mollusk is rarely seen in motion, except when it is actually raining. The steep and overhanging sides of the small rocks of rugged limestone in the woods on the Laventille Hills, near Port-of-Spain, are frequently decorated with dozens of these little shells attached by their apertures to the rock.

STREPTAXIS, Gray.

Streptaxis deformis, Fér., sp.

The *animal* is of a delicate pink or yellow colour; and it is found both on trees and on the ground in the woods. Lingual teeth 10.0.10, aculate. Judging by the teeth, no less than by the form of the immature shell, *Streptaxis* would be classed nearer to *Zonites* than to *Helix*. The teeth are all simple, like those on the lateral portion of the dental membrane of *Zonites cellarius*; but in *Streptaxis deformis* they are longer, and have narrower bases.

SIMPULOPSIS, Beck.

Simpulopsis corrugatus, n. sp.

Shell imperforate, subglobose, very thin, membranaceous, somewhat flexible, greenish hyaline, corrugated by stout, rather irregular, longitudinal ribs; suture linear; spire small, convex; whorls 4, convex, rapidly increasing, the last one forming the greater portion of the shell; aperture large, rather oblique, rounded; peristome simple; columella arcuate. Height 0.38 inch, greatest breadth 0.47 inch; height of aperture 0.3 inch, breadth of aperture 0.25 inch.

Animal greyish-brown; tentacles four; eyes on the upper pair. Mantle-edge narrowly reflexed over the peristome. I regret having been unable to examine the teeth of this mollusk, the only three examples I found having decomposed before I had an opportunity of preserving the soft parts.

This species comes nearest to *S. brasiliensis*. The aperture is more nearly orbicular, and the ribs larger than in *S. rufovirens*. The shell is less *Succinea*-shaped than that of *S. brasiliensis*.

CONULUS, Moquin-Tandon.

Conulus vacans, n. sp.

Shell small, trochiform-depressed, subperforate, thin, fragile, pellucid, shining, brownish horn-coloured; whorls 5, carinate, flattened and obliquely striate above, closely covered with fine, longitudinal, rather wavy striæ, visible under a lens, and most distinct on the polished under surface; spire conoidal; aperture lunate; peristome simple, acute; columellar margin slightly reflected. Greatest diameter 0.18 inch, height 0.12 inch.

The *animal* has four stout tentacles. Mantle filling the aperture and projecting, but not reflected over any part of the shell. Foot narrow, truncate, with a small retractile appendage on the truncate tail. ♂ organ stout, on the right side, below and a little behind the upper pair of tentacles. The foot has a median

band separated by a fine line or groove from the lateral portions on each side.

Lingual teeth about 30.5.0.5.30, broad, subequal: central obsolete; first five laterals symmetrical, with a larger rounded cusp having a smaller cusp of similar shape on each side; outer laterals bicuspid, resembling the teeth of *Testacellus*.

Conulus vacans lives on epiphytal orchids, and also on the roots and stems of ferns. It is viviparous; and in the wet season individuals are found containing ten or twelve young, in different stages. When excluded, the young shell has two whorls, and is about one-tenth of the diameter of the full-grown shell.

ANODON, Cuvier.

Anodon Leotaudi, n. sp.

Shell transverse, oval-oblong, very inequilateral, somewhat folded posteriorly, striated by numerous concentric lines of growth, which become rather subrugose towards the margins, and which are crossed by numerous inconspicuous radiating striæ; valves moderately thick; umbones somewhat tumid; epidermis shining, dark olive-brown, passing into black; hinge-line long, slightly curved and forming an angle with the rounded anterior end; posterior end with a steep oblique slope, scarcely truncate; interior brilliantly iridescent, inclining to rose-colour. Length 3.3 inches, height 1.8 inch, thickness 1.2 inch; length of hinge-line 2.3 inches.

The nearest species to this is perhaps *A. amazonensis*, Lea*, from which this species may be distinguished by its longer hinge-line, its steeper posterior slope, and the more abrupt angle formed by the hinge-line with the anterior end. Similar characters separate it from *A. trigona*, Spix, than which it is more transverse.

I have much pleasure in dedicating this shell to my friend Dr. Leotaud, the learned ornithologist of Trinidad, in acknowledgment of his having presented me with the first example I had seen of the species.

Cyclostomus citrinus, Sow., is recorded as a Trinidad shell. I have never found any mollusk answering to the description of that species; and I should not be surprised if the true habitat turned out to be Trinidad de Cuba.

Helix perplexa, Fér. (*H. granifera*, Gray). This is stated to be a Trinidad species; but I believe the true locality to be Grenada.

Helix discolor, Fér. Also reported as a Trinidad species; but I have not found it in the island. Of *H. Isabella*, Fér., I once

* Observations on *Unio*, &c. vol. x. pl. 46.

found a single derelict example near the shore, which might have come on drift-wood or otherwise from some other island.

Valvata agglutinans. In my former communication in the 'Annals' I described a shell under this name. It seems, however, to be similar to the *Thelidomus brasiliensis* of Swainson. It is not a mollusk, but the larva-case of a species of *Phryganea*.

Melampus coffea exists in abundance on the northern and eastern coasts, where *M. pusillus* and *Pedipes afra* will probably also be found. But as these shells never occur beyond the influence of salt water, and as their geographical distribution is similar to that of the marine Mollusca, I have not included them in this list.

Of *Neritina* we have two marine species, viz. *N. viridis* and *N. meleagris*. The latter will live where there is a considerable admixture of fresh water*.

Distribution.

The island of Trinidad is divided into two divisions, northern and southern. The former consists in great part of ancient formations, of uncertain date, chiefly of mica-schist, compact and crystalline limestones, and a few associated shales. These rocks form a high range of hills, some of which attain elevations of 2500 to 3000 feet. A wide tract of stratified detritus, through which flows the river Caroni, runs from west to east for the greater part of the distance across the island, separating the northern district from the southern. This separation is continued to the Atlantic, on the eastern side, by barren sandy and siliceous strata, upon which, as upon the stratified detritus before mentioned, no terrestrial mollusk lives. It is rather curious that this division has been sufficient to cause a noticeable difference in the molluscan fauna of each district. In the table I have drawn up to exhibit the distribution of the species, I have inserted columns to show how far this is the case. From this table it will be seen that the molluscan fauna of the northern division has a greater number of species identical with or allied to those of Venezuela and the Antilles than that of the southern; while that of the latter has a greater affinity to the fauna of the Guianas. This fact may not go for much, it is true, and it is possible that some of the species may ultimately be found to have a wider range; but I thought the point worth noting. Where I have deemed the species peculiar, I have taken an allied form for the purpose of carrying out the comparison.

* Some living land-shells from the Antilles (*Bulinus exilis*, *B. virgatus*, a species of *Cistula*, and *Macroceramus signatus*) escaped from my vivarium on one occasion. Should these be hereafter found in Trinidad, they should not be confounded with the aboriginal Mollusca.

It will be seen by the table that scarcely more than one-third (12) of the whole number (33†) of species found in the island are peculiar to it. Of the remainder, sixteen are found in the Antilles and thirteen in South America, eight being common to the Antilles and the continent.

Examples of all the peculiar species, and of most of the other shells mentioned in this communication, have been deposited in the British Museum.

Table showing the Distribution of the Terrestrial and Fluviatile Mollusca of Trinidad.

	North Division.	South Division.	Allied Species, where the species is peculiar.	Locality, if found elsewhere; if peculiar, Locality of allied Species.
<i>Neritina microstoma</i> ..	*	Cuba.
<i>Paludestrina spiralis</i> ..	*	..	<i>P. candeana</i>	S. America.
<i>Ampullaria urceus</i>	*	*	Venezuela.
— <i>effusa</i>	*	*	S. America.
<i>Marisa cornu-arietis</i> ..	*	*	S. Amer.; St. Vincent.
<i>Adamsiella aripensis</i> ..	*	..	<i>A. xanthostoma</i> , &c.	Jamaica.
<i>Cyclotus translucidus</i> ..	*	*	Venezuela.
— <i>rugatus</i>	*	..	<i>C. stramineus</i>	Venezuela.
<i>Helicina nemoralis</i>	*	*	<i>H. jamaicensis</i>	Jamaica.
— <i>barbata</i>	*	*	<i>H. Dysoni</i>	Honduras.
<i>Physa rivalis</i>	*	Antilles.
<i>Planorbis terversanus</i> ..	*	*	Cuba.
<i>Vaginulus Sloanei</i>	*	Jamaica; Cuba.
<i>Succinea approximans</i> ..	*	*	Antilles.
<i>Bulinus oblongus</i>	*	*	S. America; Antilles
— <i>zebra</i>	*	Antilles; S. America.
— <i>fraterculus</i>	*	*	S. America; Antilles.
— <i>immaculatus</i>	*	Antilles.
— <i>multifasciatus</i>	*	S. America; Antilles.
— <i>var. imperfectus</i> †	..	*	
— <i>aureolus</i>	*	<i>B. limpidus</i>	S. America.
— <i>octonoides</i>	*	*	Antilles.
— <i>caracasensis</i>	*	*	Venezuela; Antilles.
<i>Plekocheilus auris-sciuri</i>	*	*	{ <i>P. undulatus</i>	St. Vincent.
			{ <i>P. distortus</i>	Venezuela.
<i>Tornatellina lamellata</i> ..	*	*	S. America; Antilles.
<i>Stenogyra octona</i>	*	*	S. America; Antilles.
<i>Ennea bicolor</i>	*	St. Thomas, E. Indies.
<i>Vertigo Eyriesi</i>	*	Guiana.
<i>Cylindrella trinitaria</i> ..	*	..	<i>C. collaris</i>	Antilles.
<i>Streptaxis deformis</i>	*	*	S. America.
<i>Stimpulopsis corrugatus</i>	*	<i>S. brasiliensis</i>	S. America.
<i>Conulus vacans</i>	*	*	<i>C. semen-lini</i>	S. America.
<i>Anodon Leotaudi</i>	*	<i>A. amazonensis</i>	S. America.

† Including one marked variety.

‡ This variety has been included in this list principally on account of its distribution.